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EXAMINER

MILLER, BRIAN E

ART UNIT	PAPER NUMBER
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2652

DATE MAILED: 12/24/2003

11

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/845,619

Applicant(s)

PUST ET AL.

Examiner

Brian E. Miller

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 December 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

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Claims 1-19 are pending.

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/31/03 has been entered.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. All the independent claims, i.e., 1, 13, 19, contain language, i.e., "a combination of a Young's Modulus...with magnetic media at high temperatures" is indefinite, such that the metes and bounds of the claims cannot be readily ascertained. It is not readily apparent what "combination" of the recited components would produce the claimed result, i.e., "pulls the transducer back away from the magnetic media to avoid contact with magnetic media at high temperatures." Furthermore, it is not readily apparent what constitutes a *high* temperature, since "high" is a relative term, and the magnetic media is not part of a head so therefore would not be encompassed by the claim.

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3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 1-19 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a limited amount of materials and thicknesses (see for example, Table 1), does not reasonably provide enablement for an unlimited combination of materials and thicknesses as the claim language sets forth. The specification does not enable any person skilled in the art to which it pertains, without undue experimentation, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims. Furthermore, it is unclear as to what temperature would encompass "high" and how far can such a "combination" pull the transducer back away from the magnetic media?

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-19 are rejected under 35 U.S.C. 102(b) as being anticipated by Koshikawa et al (US 5,898,542). Koshikawa et al discloses a MR head for a magnetic disk drive (see FIG. 8), the head (referring to FIG. 5) including: a substrate 1 made of a material (AlTiC) with a thermal expansion rate CTE1 (7.9); a transducer (at least including elements 7-9) bonded to the substrate (through insulate layer 4) composed of materials, e.g., Cu, NiFe, with a thermal expansion rate

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CTE2 (Cu-16.5, NiFe-12.2) that is greater than CTE1 (7.9); a first restraint layer 5 that has a bond to a side of the transducer and is formed of a material (SiO_2) having a thermal expansion rate CTE3 (1.0) that is less than CTE1 (7.9). See also col. 1, lines 35-51 for the description of the head, and col. 2, lines 51-57 for the use of materials. With the above construction, it is considered that combination of the restraint layer(s) and transducer bonded together to have a combined expansion rate that is substantially matched with CTE1 (re claims 2, 5); wherein the first restraint layer has dimensions and material properties that are selected to limit protrusion of the transducer beyond the substrate over an operating temperature range (see col. 5, lines 13-21) (re claim 3); a second restraint layer 4 that has a bond to a second one of the sides of the transducer, and that is formed of a material (SiO_2) has a thermal expansion rate CTE4 (1.0) that is less than CTE1 (7.9) (re claim 4); a third layer 9 that has a bond to the second restraint layer (re claim 6); wherein a bonding film 7 is between the second restraint layer 4 and the third layer 9 (re claim 7); wherein the first constraint layer has a width that is substantially the width of the transducer and substrate (see FIG. 6(b)) (re claims 8-9); substrate has a CTE between 7-8.3, i.e., 7.9 (re claim 10); the transducer comprises metals with thermal expansion rates in the range of 12 to 17 (NiFe-12.2) (re claim 11); the first constraint layer comprises material with a thermal expansion rate of about 1.0-4.3 (SiO_2 -1.0) (re claim 12).

With respect to claims 13-17, the above structure is considered to encompass the method steps as claimed. Claim 18 is considered to also be encompassed by the above structure since the first restraint layer 4 is a thin film and deposited on another thin film, i.e., 8 (NiFe).

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With respect to the newly added language to the independent claims, e.g., “a combination of a Young’s Modulus...with magnetic media at high temperatures”, and in view of the 112 paragraph 2 rejection, above, it is considered to be encompassed by Koshikawa et al.

7. Claims 1-11, 13-19 are rejected under 35 U.S.C. 102(b) as being anticipated by Okai et al (US 5,687,045). Okai et al discloses a MR head for a magnetic disk drive (see FIG. 16), the head (referring to FIGs. 1-2) including: a substrate 11 made of a material (AlTiC) with a thermal expansion rate CTE1 (7.9); a transducer (at least including elements 13-15) bonded to the substrate (through insulate layer 12) composed of materials, e.g., Cu, NiFe, with a thermal expansion rate CTE2 (Cu-16.5, NiFe-12.2) that is greater than CTE1 (7.9); a first restraint layer 17 that has a bond to a side of the transducer and is formed of a material ($\text{Al}_2\text{O}_3\text{-SiO}_2$) having a thermal expansion rate CTE3 (taking a 60% weight of Al_2O_3 at a CTE of 7.8 and 40% weight of SiO_2 with a CTE of 1.0 the overall CTE would be about 5.0) that is less than CTE1 (7.9). See also col. 13, line 19 to col. 14, line 15 for the description of the head. With the above construction, it is considered that combination of the restraint layer(s) and transducer bonded together to have a combined expansion rate that is substantially matched with CTE1 (re claims 2, 5); wherein the first restraint layer has dimensions and material properties that are selected to limit protrusion of the transducer beyond the substrate over an operating temperature range (see col. 14, lines 2-7) (re claim 3); a second restraint layer 12 that has a bond to a second one of the sides of the transducer, and that is formed of a material ($\text{Al}_2\text{O}_3\text{-SiO}_2$) has a thermal expansion rate CTE4 (same as CTE3 as discussed above) that is less than CTE1 (7.9) (re claim 4); a third layer 14 that has a bond to the second restraint layer (re claim 6); wherein a bonding film 13 is between the second restraint layer 12 and the third layer 14 (re claim 7); wherein the first

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constraint layer has a width that is substantially the width of the transducer and substrate (see FIG. 1) (re claims 8-9); substrate has a CTE between 7-8.3, i.e., 7.9 (re claim 10); the transducer comprises metals with thermal expansion rates in the range of 12 to 17 (NiFe-12.2) (re claim 11). With respect to claims 13-17, the above structure is considered to encompass the method steps as claimed. Claim 18 is considered to also be encompassed by the above structure since the first restraint layer 17 is a thin film and deposited on another thin film, i.e., 13 (NiFe). With respect to the newly added language to the independent claims, e.g., "a combination of a Young's Modulus...with magnetic media at high temperatures", and in view of the 112 paragraph 2 rejection, above, it is considered to be encompassed by Okai et al.

Response to Amendment

8. Applicant's arguments filed 12/8/03 have been fully considered but they are not persuasive.

A...Applicant asserts that the newly added language is not disclosed by Koshikawa et al nor Okai et al with respect to the claimed "first restraint layer (or means for restraining)."

In response, the Examiner maintains that the newly added language remains indefinite because the metes and bounds cannot be readily ascertained and is further unclear as set forth in the newly presented 112 first paragraph rejection. There is no possibility that a skilled artisan could make and/or use this invention without undue experimentation. The claims would encompass unlimited combinations and permutations which would be further indefinite.

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B...Applicant further states "that, if a layer is made thick enough in combination with its Young's Modulus and Poisson's ratio, then that layer can act as a restraint layer (or restraint means)."

The Examiner maintains that the conditional word "if" in the above statement renders the whole argument moot, since the claims do not specifically set forth a structure to produce the claimed results.

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian E. Miller whose telephone number is (703) 308-2850. The examiner can normally be reached on M-TH 7:15am-4:45pm (and every other friday).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa T. Nguyen can be reached on (703) 305-9687. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 872-9306 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4750.



Brian E. Miller
Primary Examiner
Art Unit 2652

bem
December 22, 2003